estuaryWise

100 tips on how you can prevent pollution of our bay and delta

Handbook for the San Francisco Bay-Delta Estuary

Help at Your Fingertips

Where to Dispose of Household Hazardous Wastes

Alameda County
HHW Collection facilities to be sited soon
(510)670-5514

Contra Costa County
HHW Collection Day, Used Oil
(510)646-2286

Marin County
HHW Collection Day Hotline (415)499-7868
Used Oil (415)453-1404

Napa County
HHW Collection Day, Used Oil
(707)253-4269

Sacramento County
HHW Collection Day (916)855-8555
Used Oil Hotline (916)363-9390

San Francisco County
HHW Collection Facility Hotline
(415)554-4333
Used Oil
(415)468-2442

San Joaquin County
HHW Collection Day, Used Oil
(209)468-3066

San Mateo County
HHW Collection Day, Used Oil Hotline
(415)363-4718

Santa Clara County
HHW Collection Program
(408)299-7300

Solano County

Fairfield
HHW Collection Day (707)428-7488
Used Oil (707)422-4244

Vacaville
HHW Collection Day (707)449-5169
Used Oil (707)448-9926 (707)448-2945

Vallejo
HHW Collection Day, Used Oil
(707)552-3174

Sonoma County
HHW Collection Day, Used Oil
(707)527-2231

Yolo County
HHW Collection Day, Used Oil
(916)666-8775

City Programs

Many cities have their own household hazardous waste collection events and programs. To find out more, call your local city public works department.

Bay Area

- Most Grand Auto and Kragen Auto Works stores take used motor oil (call ahead to confirm).
- Recycling Hotline (a statewide referral service on where to take all recyclable items including used motor oil)
(800)553-2962
- California AETC in Richmond takes commercial and household hazardous waste for a fee.
(510)233-8001

Poison Control Centers

San Francisco, Alameda, San Mateo, Marin, Contra Costa, Napa and Sonoma Counties
(415)476-6600
(800)523-2222

Santa Clara County
(408)299-5112
(800)662-9886

Sacramento, Yolo and San Joaquin Counties
(916)734-3692
(800)342-9293

Where to Report Spills & Other Problems

BayKeeper
(800)KEEPBAY

California Department of Fish & Game Hotline
(poaching, creek pollution, habitat destruction, fish kills)
(800)952-5400

California Marine Mammal Center
(report sick or entangled marine mammals and birds)
(415)289-SEAL

Central Valley Regional Water Quality Control Board
(spills and water quality problems in Delta and watershed) (916)361-5640

National Pesticide Telecommunication Network
(health effects & emergency information)
(800)858-7378

National Response Center
(major oil spills)
(800)424-8802

S.F. Bay Regional Water Quality Control Board
(spills and water quality problems in Bay)
(510)464-1255

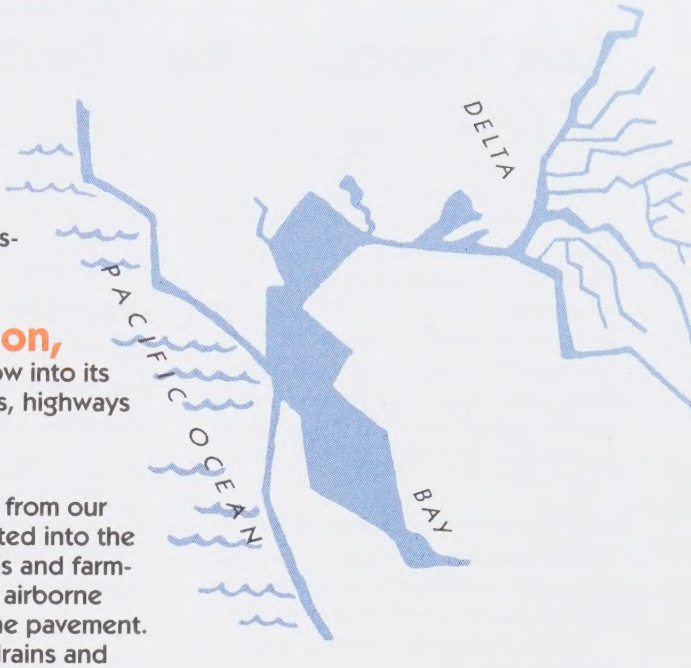
Toxic Information Hotline
(health effects of chemicals)
(510)849-5208

Waste Alert
(environmental crimes and improper disposal hazardous materials in California)
(800)25T-OXIC

U.S. Coast Guard
(federal violations)
(800)424-8802 Channel 16 VHF-FM

U.S. Environmental Protection Agency, Region 9,
Oceans and Estuaries
(415)744-1953 or 2300

Where You Come In . . .



San Francisco Bay and the Delta need your help. This important estuary conveys the Sacramento and San Joaquin rivers to the Pacific Ocean, and sustains both rich ecosystems and the nation's fourth largest metropolitan region.

The Estuary isn't the dirtiest in the nation, but it isn't the cleanest either. In fact, hundreds of pollutants flow into its waterways every day from our homes, offices, streets, farm fields, highways and industries.

While treatment plants remove many pollutants from our wastewater systems, many other pollutants find their way untreated into the Estuary via rain and runoff. Water seeping through lawns, landfills and farmland picks up harmful chemicals, salts and fertilizers. Rain brings airborne contaminants down from above and washes oil and grease off the pavement. All of this polluted water finds its way into creeks, rivers, storm drains and other drainage systems flowing into the Estuary.

So much polluted water flowing in from so many sources makes treatment a costly, if not impossible, option. It's much more effective to control pollution at the source, and that's where you come in.

Each of us is a source of pollution. Believe it or not, washing your car, unclogging your drain, doing the laundry, changing your oil, even walking the dog, can all pollute our Bay and Delta. Multiply the impacts of one household or business by the 7.6 million residents of the 12 counties immediately adjacent to the Estuary and you've got a problem. Multiply the benefits of 7.6 million people making small but significant changes in their lives to prevent pollution and you've got a solution. While pollution prevention is where your effort as an individual is now critical, the things you've been doing all along to recycle and conserve water can help too. By reducing your demand for every kind of product and natural resource, you're reducing associated impacts on the environment.

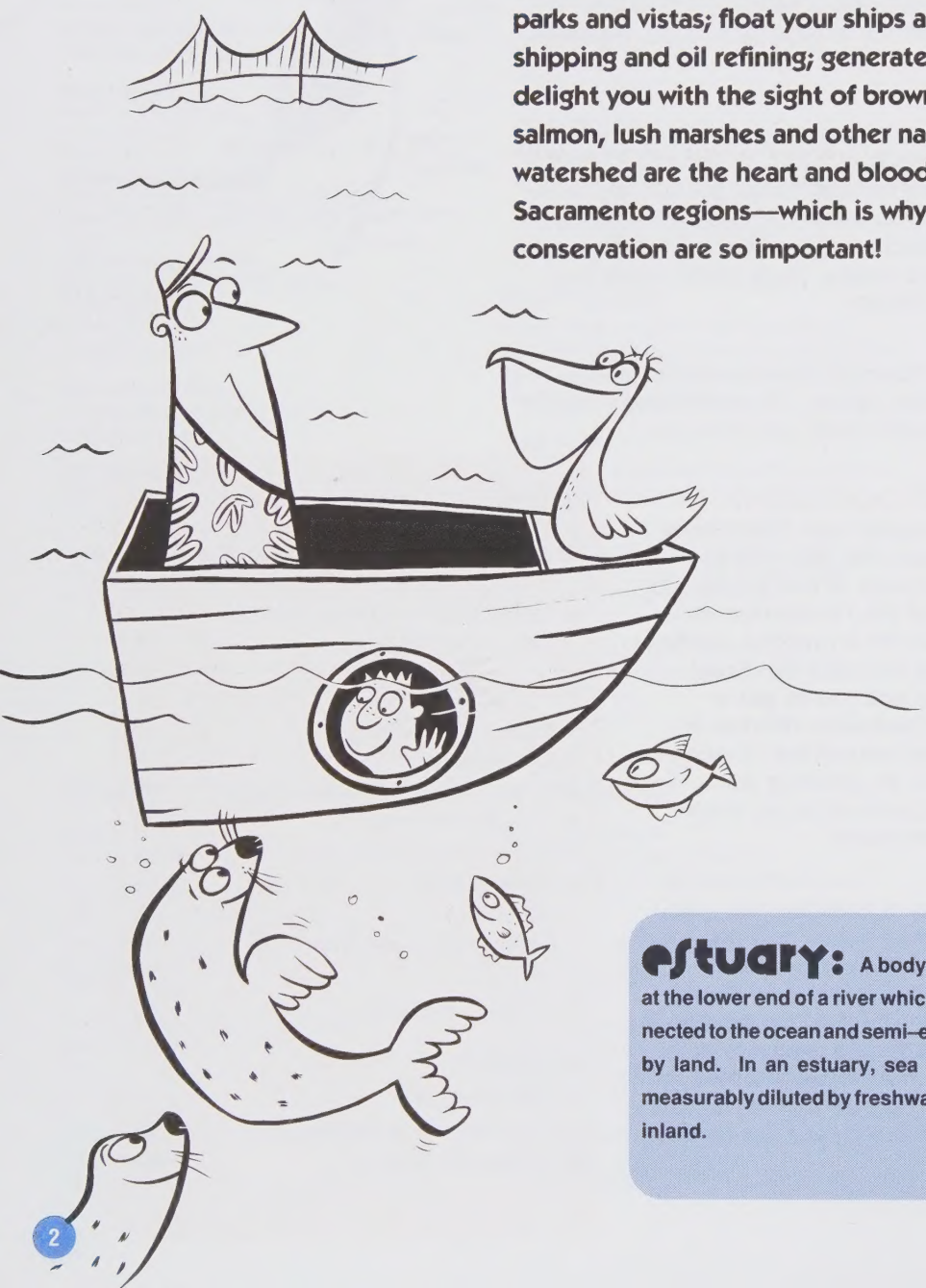
This handbook outlines dozens of pollution prevention and conservation actions you can take in your home, workplace and community. It's been reviewed by water quality experts, health officials, scientists and citizens, and maps out actions they know from experience will make a difference. And beyond the immediate benefits, this handbook offers the beginnings of a blueprint for an environmentally sound way of life. Faced with increasing pollution and dwindling resources, this new way of life is something we must all pioneer if we are to survive and prosper in the centuries to come.

What's inside?

San Francisco Bay–Delta Estuary

A Part of Your Life

You'd be surprised how much the Estuary and its watershed contribute to your life. These waters irrigate your fruits, grains and vegetables; fill the taps in your homes, businesses and industries; dilute and disperse your sewage and wastewater; grace your shoreline parks and vistas; float your ships and boats; offer you jobs in farming, shipping and oil refining; generate electricity; produce table salt; and delight you with the sight of brown pelicans, migrating ducks, silver salmon, lush marshes and other natural wonders. The Estuary and its watershed are the heart and bloodstream of the San Francisco and Sacramento regions—which is why pollution prevention and water conservation are so important!



Size and Shape The Estuary encompasses roughly 1,600 square miles, including 700 miles of rivers and sloughs, and 1,100 miles of levees. It channels two great California Rivers—the Sacramento and the San Joaquin—into the Pacific Ocean and drains over 40% of California's landscape (63,600 square miles) and 47% of the state's total runoff. About 90% of its freshwater comes from the two rivers and 10% from local drainage basins. Ocean and river waters mingle in the Estuary, supporting more biological diversity than is found in either salt or freshwater alone. Each tidal cycle brings about 1 1/4 million acre feet of salt water in and out of the Estuary; daily freshwater inflows average 50 thousand acre feet.

The Estuary combines not only salt and freshwater, but also terrestrial and aquatic ecosystems. These zones of overlap sustain an extraordinary diversity of flora and fauna, not to mention the nation's fourth largest metropolitan region.

estuary: **A body of water at the lower end of a river which is connected to the ocean and semi–enclosed by land. In an estuary, sea water is measurably diluted by freshwater from inland.**

8-ways the estuary contributes to your life

1 Farms: Freshwater diverted from the Delta and Estuary watershed irrigates over 4.5 million acres of farmland. **2 Drinking Water:** 20 million people (two thirds of the state) get drinking water from the Estuary watershed. **3 Recreation:** Californians use the Estuary for fishing, hunting, boating, sailboarding, swimming and bird-watching. The Estuary supports 290 shoreline parks, 200 duck clubs, 300 marinas, and about 500,000 recreational boaters. **4 Shipping:** Estuary waters support six major ports—serving over 4000 commercial vessels a year—as well as 21 naval bases. **5 Sewage Treatment:** Cities up and down the Estuary have long used its waters for disposal of treated sewage effluent. Between 1984-1986, the combined average volume of wastewater discharged from the more than 50 publicly owned sewage treatment works serving the Bay and Delta was 855 million gallons a day. **6 Industry:** Many industries use the Estuary's water for cooling, cleaning and other processes. Others locate on the Estuary's shore to have direct access to ships and a convenient outlet for wastewater. Between 1984-1986, the combined average volume of wastewater discharged into the Estuary from chemical, metal finishing, oil refining, paper and other industries was 60 million gallons a day. **7 Hydropower:** Flows through the Estuary watershed sustain electric powerhouses at over 700 locations. **8 Salt:** The Bay yields more than a million tons of salt for human use every year.

Wildlife at Risk

The Estuary supports a diverse community of aquatic plants, organisms and animals—from the salt–loving cordgrass in the marshes and the tiny worms in the mud to sturgeon, sandpipers and ducks. Most fish and wildlife populations are now in decline as a result of development, habitat loss, intensive freshwater management and pollution.

Estuarine organisms can accumulate pollutants directly from the water or from eating contaminated food. Many organisms can adjust to low concentrations of pollutants, but even small doses can adversely affect species already stressed by other chemicals and environmental factors. Minimizing pollution and conserving water will help preserve the living ecosystem at our doorstep.

Plankton and Invertebrates:

The Estuary's food chain begins with minute drifting plants and animals known as plankton—which provide food for invertebrates such as shrimp, clams and worms. These small organisms are eaten, in turn, by herring, bottomfeeding sturgeon and other larger forms of estuarine life.

Fish:

Each year, over two-thirds of the state's salmon pass through the Bay and Delta on their way to spawning grounds upstream. Salmon, striped bass and American shad are just three of the anadromous (migratory) fish species sustained by the Estuary. Altogether, over 120 fish species thrive in the Estuary, including marine species from the ocean such as herring, anchovy and English sole; estuarine species adapted to brackish waters such as the yellowfin goby and starry flounder; and freshwater species such as sunfish and catfish.

Birds:

The Estuary's wetlands feed and shelter millions of waterfowl, shorebirds and seabirds every year. As many as half the birds migrating the Pacific Flyway between the Arctic and Baja Mexico winter around the Estuary. The region hosts 600,000–800,000 waterbirds at a time. Winter populations for the Delta include over a million pintail, mallard and other ducks; a quarter of a million geese; and thousands of tundra swans, greater sandhill cranes and other migrating birds, not to mention stilts, avocets, hawks, sparrows and other avian fauna.

Aquatic Mammals:

Though marine mammal populations have been greatly reduced by overhunting and habitat loss, a few hundred harbor seals still haul out and pup at secluded spots along the Estuary shoreline, and sea lions frequent the San Francisco waterfront. River otters still inhabit Delta waterways.

Endangered Species:

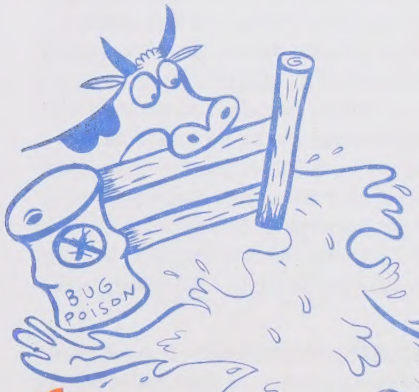
In the Estuary area, over 90 species of insects, amphibians, reptiles, birds and mammals are currently designated by federal and state governments as having declined sufficiently to warrant special protection or monitoring. Some of the most endangered species include the salt marsh harvest mouse, the California freshwater shrimp, the California clapper rail and the winter–run chinook salmon.

Protecting and Restoring the Estuary

Clearly, the Estuary plays an irreplaceable role in our lives and those of the many birds, fish and other organisms that inhabit its shores and waters. Unfortunately, the Estuary is now under significant environmental stress due to pollution, wetland loss, freshwater diversion, dredging and dredged material disposal, and urban and suburban development on its shores and watershed lands. To address these problems estuarywide, the U.S. Environmental Protection Agency launched the San Francisco Estuary Project in 1987. This five year, cooperative program brings diverse public interest groups, business, elected officials and government agencies together to promote environmentally sound management of our Bay and Delta. In 1992, the Project will publish a *Comprehensive Conservation and Management Plan* (CCMP) for the Estuary. Pollution prevention and water conservation are both Project priorities, and this handbook provides an essential tool for involving citizens like you in our efforts to protect and restore the Bay and Delta.

The Nitty Gritty of Water Pollution

Sources and Impacts



Pollutants enter the Estuary from our air, land and waterways. Their sources range from industry, farms and boats to our own homes, gardens, pets and cars. On a regional basis, we contribute an estimated 5,500-44,000 tons of at least 65 pollutants to the Bay and Delta each year. Despite great progress in controlling certain types of pollution over the past few decades, the region remains far from achieving the goals established under the Clean Water Act in 1972.

Sources

Estuary pollution comes from many sources including municipal sewage treatment plants, industries, urban and agricultural runoff, spills, atmospheric fallout, landfill seepage, illegal dumping, and natural erosion and decay processes. Some sources are diffuse, like runoff; some are focused like the 200 treatment plants and industries along the Estuary shore. The latter treat their wastewater before discharge to meet government water quality standards. Treatment usually removes solids, organic materials and some heavy metals, and disinfects the effluent.

Runaway Runoff

Runoff refers to the water that runs off the landscape into the Estuary. Along the way, it picks up pollutants associated with local land uses—motor oil from city streets, loose dirt from construction sites, pesticides from farms and gardens. The water comes from rainfall, irrigation systems, garden watering, and washdown of cars, sidewalks, work areas and other surfaces. How much water runs off depends on the slope and permeability (the rate at which water passes through soil) of the land surface. If the surface is permeable, water can percolate through soil and vegetation—a process that breaks down some pollutants. If the surface is a hard, impermeable rooftop or pavement, pollutants can be swept away in runoff.

Down the Drain

In urban areas and rural towns, runoff flows into storm drains—those innocuous public drains in our streets covered with a metal grill. A storm drain system consists of above and below ground structures for transporting stormwater to streams or outfalls for flood control purposes. Most street and building gutters channel water into these drains. And the drains lead directly to streams, rivers and the Estuary. In agricultural areas like the Delta, farm drains serve a similar purpose, channelling untreated excess irrigation water and runoff into waterways.

Managing Runoff

Capturing and treating runoff and stormwater would be a difficult and expensive task. Flows can be very large, highly unpredictable, and laden with sediment. For this reason, most runoff collected in storm drains is discharged untreated into the Estuary. San Francisco is unique in that it combines sanitary and storm drain systems. The city's storm drain runoff usually gets the same treatment as sewage. During storms, however, the combined flow sometimes overwhelms treatment capacity, releasing the excess mix of untreated sewage and runoff into the Estuary.

Recognizing the importance of stormwater as a pollutant source, government regulators now require municipalities and other types of storm drain users to file for discharge permits and develop stormwater management plans.

Pollutant Low Down

Runoff and other sources add diverse pollutants to the Estuary. Some pollutants can concentrate to toxic levels in sediments and organisms. These include naturally occurring trace elements (such as lead, mercury and selenium), as well as hydrocarbons (such as oil and grease), agricultural and garden chemicals, and polychlorinated biphenyls (PCBs—now banned but often found in old transformers and landfills). Other pollutants like plastic debris and suspended sediments can also affect environmental quality.

How Clean is our Estuary?

While the Bay and Delta exhibit moderate pollution compared to other urban estuaries, high levels of some pollutants in certain areas are cause for concern. Researchers have found environmentally significant levels of copper, nickel and silver in parts of the South Bay, for example. They've also found accumulations of hydrocarbons, PCBs, copper, cadmium, mercury, dioxins, DDT derivatives, and other pollutants at various sites throughout the Estuary. These pollutants can change chemical forms upon entering the Estuary, or as they move through the water in response to tides, freshwater inflows and winds. Many pollutants bind to particles of sand and silt.

Water use Matters too!

Water quality can also be affected by how we use the Estuary's limited freshwater resources. In recent years, more than half the Estuary's natural river flow has been diverted for human uses through the dams and canals of the world's largest man–made water management system. Freshwater diversion and flood control activities are associated with environmental problems such as the decline of fisheries and changes in water temperature, salinity and ecosystem productivity. Conserving precious water supplies remains central to the future health of our Bay and Delta.

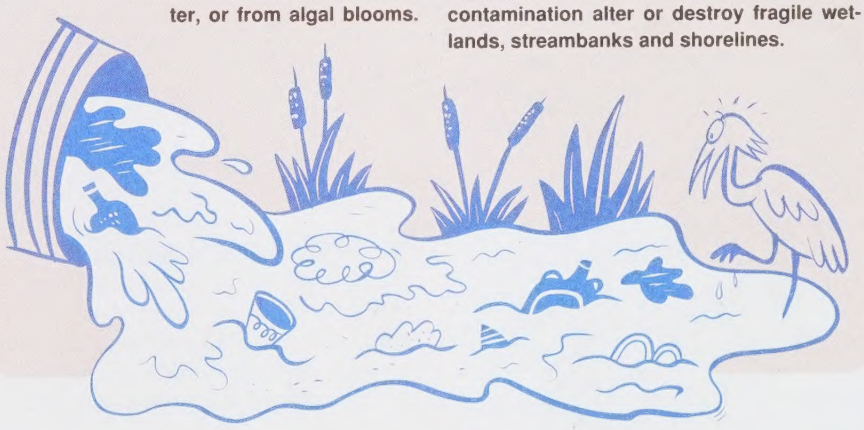
Impacts of Pollution

On Our Everyday Lives

Deterioration of environmental quality and natural resources. **Contamination of water supplies.** **Food contamination.** State regulations warn of potential health hazards from eating the Estuary's striped bass, shellfish and several species of diving ducks due to elevated levels of mercury, selenium and other contaminants. **Loss of hunting,** fishing, swimming, boating and other recreational opportunities. **Loss of top soil** and property damage due to erosion. **Navigational hazard.** Eroded sediments can exacerbate flooding, form shoals, and fill in harbors, reservoirs, drainage ditches, and irrigation channels.

On the Ecosystem

Food chain contamination. Plants and animals in the mud and water column take up contaminants and pass them on through the aquatic food chain to higher–level organisms. By the time they reach birds, mammals and humans, pollutants can concentrate to toxic levels. **Fish kills** from sudden releases of pesticide– or chlorine–laden water, or from algal blooms. Blooms occur when excessive levels of nutrients—generally coming from fertilizers, detergents and animal wastes in runoff—enrich the water column and promote extraordinary plant and algal growth. The bloom depletes the oxygen supply in the water necessary for the survival of fish and other aquatic organisms. **Lethal impacts** on birds and marine mammals. Oil coats bird feathers and the fur of aquatic mammals, leading to hypothermia, poisoning and death. Marine mammals and seabirds eat plastic and styrofoam, which can injure and block their digestive tracts. They can also be strangled or entrapped by nets, six-pack yokes, fish lines and packaging rings. **Reproductive problems** and reduced resistence to infection among invertebrates, fish, birds and marine mammals as a result of trace element and toxic chemical contamination. **Loss of sunlight** necessary for submerged aquatic vegetation as a result of algal blooms, turbidity from suspended sediments, and oil slicks. **Habitat loss** as sediments bury bottom dwelling communities and cover the spawning beds of migratory fish, or as erosion and contamination alter or destroy fragile wetlands, streambanks and shorelines.



Pollution Prevention—*It's up to you!*

The best way to stop pollution lies at the source, and that's why your participation is so important. Source reduction and waste minimization are the most effective approaches to pollution prevention. Source reduction uses raw material substitution and technological improvements to eliminate toxic wastes at the source, before they enter treatment systems and the Estuary. Waste minimization works to reduce the overall volume and toxicity of wastes through waste treatment, reuse and recycling.

Many businesses now find adopting these approaches can reduce pollution, conserve water, and save them money on waste treatment and disposal. Many politicians and regulatory agencies now recognize that supporting local source reduction efforts makes better sense than multi-million dollar clean-ups. And many citizens, like you, now realize that how they use and maintain their homes, gardens, cars and businesses directly affects the quality of their environment.

Inside Your Home

Your cupboards and closets contain dozens of everyday cleaning, polishing and painting products hazardous to our waterways. Under the sink lurk the drain openers, oven cleaners and insect sprays; out in the laundry room the chlorine bleaches and spot removers; down in the basement workshop the glues, paints and wood preservatives. Amazingly enough, these and other common household items can add up to a considerable source of pollution, once they find their way from our homes to the Estuary via drains, toilets and your local landfill. And don't forget that leaky faucet in the bathroom guzzling our scarce freshwater supply.

☛ Read labels before

buying household cleaners and other products. Become an environmentally friendly consumer by avoiding products containing certain ingredients (see p. 21, *Watch Out For These Toxic Ingredients*).

☛ Examine warnings.

Products labeled *caution* are usually the least toxic; *warning* means moderate toxicity; and *danger, poison,* or the symbol of a skull and crossbones means it's extremely toxic. For a detailed product rating, see p. 22.

☛ Use safe substitutes.

Most cleaning challenges can be met with baking soda, salt, borax, vinegar, water or elbow grease in one combination or another. For some safe homemade cleaner recipes, see p. 21.

☛ Buy only as much

of a household chemical as you need. Use carefully to minimize waste and spills. Store leftovers in sturdy, air–tight, labeled containers. Use things up or give them to friends instead of throwing them away.

☛ Do not pour toxic paints,

preservatives, brush cleaners or solvents down the sink or toilet, and never down storm drains.

Tackle it without toxics . . .

☛ Take unwanted

chemicals and paints to hazardous waste disposal facilities. Many cities and counties sponsor household hazardous waste drop–off days. Some actually maintain collection centers. Find out about collection days and centers in your area by calling one of the phone numbers listed on the inside cover of this guide. Ask them for advice on which products warrant special disposal.

☛ Choose water–based

paints over oil–based paints. Look for the words *latex* or *clean up with water* on the label. Don't use paints over 15 years old —they may contain toxic levels of lead.

☛ Reuse paint thinner:

set aside in a closed jar to settle out paint particles, then pour off clear liquid for future use. Wrap the residue in newspaper and dispose of it in the trash.

☛ Care for your drains,

so you can keep your system free of clogs without using chemical drain openers. To prevent clogs, use a sink basket to catch food wastes and periodically flush the drain with boiling water.

☛ Maintain your air

conditioning to prevent freon leaks. Freon, a chlorofluorocarbon, can speed global warming and sea level rise.

☛ Kill termites with

heat and cold treatments instead of fumigation, which may involve toxic chemicals. For information on these and other less–toxic options, call the Bio–Integral Resource Center (510)524-2567.

☛ Conserve California's

scarce water. Don't let the tap run while brushing teeth, washing dishes or shaving. Install a water conservation shower head. Take short showers instead of baths. Place one or two half–gallon bottles of water in the toilet tank to reduce water used for flushing. Machine wash only full loads of laundry and dishes. Flush the toilet only when necessary. The more freshwater that is diverted from the Estuary, the less there is left for drinking water, irrigation, fish and wildlife habitat preservation, and other uses.

☛ Check for leaks and

drips regularly, and fix them. To test for a toilet leak, add a few drops of food coloring to the tank and see if it shows up in the bowl.

☛ Avoid products

with excess packaging. This may reduce pollution from packaging industries.

☛ Buy products made

from renewable resources. Choose paper over plastic products, and cloth over disposable diapers.

☛ Recycle paper,

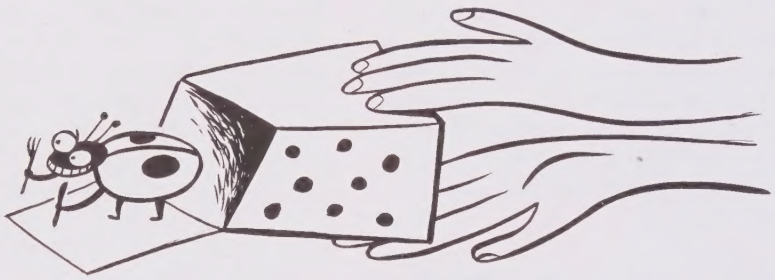
cardboard, aluminum cans and foil, tin cans, glass and some plastics to conserve dwindling natural resources. Many communities now have curbside pick–up; most have neighborhood recycling centers.

believe it or not

Every year the average American family disposes of 21 pounds of household hazardous waste. As much as 50% of all household hazardous waste is liquid. A city the size of San Jose discharges about 21 tons of toilet bowl cleaner, 96 tons of liquid household cleaners, and 24 tons of used oil into the sewage system each year. A recent Palo Alto household hazardous waste round–up collected more than 6500 pounds of material (2200 of which was recyclable latex paint) in a single day. The city of Santa Clara collected 13,359 gallons of used motor oil through residential curbside pick-up between June 1990 and July 1991. Collection programs put 10-20% of waste to use as industrial fuel, and often recycle 30–50% of what's leftover. Plastics dumped in landfills may take 200–400 years to decompose. Approximately 85% of America's babies wear disposable diapers, generating a total of 1.6 billion diapers, weighing 1.5 million tons, and occupying 0.8% of the nation's landfill space. Paper and cardboard account for up to 50% of materials that end up in the dump (all recyclable!). A full gallon of water can run out of your faucet in less than 60 seconds. A dripping faucet wastes 20 gallons of water a day; a leaking toilet 200 gallons. A bath uses 30-50 gallons of water; a short shower only 10. Water conserving showerheads reduce flows by at least 25%. Through water conservation during the recent drought, East Bay households reduced their daily water consumption by 20% (from 100 to 80 gallons).

In Your Garden

Gardening may seem like an environmentally benign activity, but many of us lack the time or know-how to keep dandelions off the front lawn and snails out of the lettuce without a helping hand from chemicals and other potential pollutants. Pesticides and herbicides not only kill your garden marauders, but also harm useful insects, sabotage your local ecosystem, and contaminate our waterways. Meanwhile, overwatering your lawn can waste water and promote runoff.



believe it or not

Leaving a hose running for one hour uses 375 gallons of water. Trickle or drip irrigation can cut water use by up to 60% and slow the growth of weeds. Many gardeners use pesticides at 20 times the rate farmers do. Up to 60% of pesticides are used to keep plants pretty and free of blemishes, rather than to ensure plant survival. Approximately 90% of the insects on your lawn are not harmful. Careful planting can reduce heating and cooling costs for your house by as much as 30%.

☛ **Limit your use of** insecticides, herbicides, fertilizers and other garden chemicals. Read labels and look for less–toxic products such as biological pesticides (like *Bacillus thuringiensis* or *B.t.*), horticultural superior oil sprays (also called *summer* or *supreme oils*), insecticidal soaps and soap solutions (1 tsp Ivory liquid/1 gal water), boric acid, dehydrating dusts (diatomaceous earth and silica gel), and insect growth regulators (which interrupt the pests' reproductive cycles). For more severe infestations, use pyrethrin-based insecticides. Make sure whatever you buy is specific to your pest or problem.

☛ Encourage natural pest

predators to frequent your yard such as birds, ladybugs, lacewings, toads and garter snakes. Green lacewings are one of your best garden buddies because they eat aphids, mites, whiteflies, small worms and insect eggs. They also hang around longer than ladybugs. Also, be sure to grow a variety of flowering plants to provide beneficial insects with nectar year–round.

☛ Take a physical approach

to controlling pests. Put up traps and barriers; remove ivy, standing water, animal wastes, rotting fruit and other pest attractors. Remove pest eggs, larvae and cocoons by hand. Good sanitation in the fall will mean less pests in the spring.

☛ Control snails by

collecting them in propped–up, overturned clay pots near the shady sides of plants, or in shallow pans of stale beer. Once collected, you can squash them. If you can't do this year–round, make sure to do it in the spring and late fall when baby snails are coming out. For ideas on how to control other specific pests naturally, see p. 21.

☛ If you must apply

chemicals, use sparingly. Follow directions and prevent spills. Avoid applying near water, drains or bare ground, or if rain or wind is forecast.

☛ Store chemicals

carefully in labeled, air–tight containers. If you spill something, do not wash down the area. Contain and absorb the spill with sawdust or kitty litter, and place the used absorbent in a strong plastic bag in the trash. If it's a large spill, take the used absorbents to a household hazardous waste collection center or event.

☛ Choose plant species

carefully. Native species often require less water and fewer chemicals. Look for disease and pest resistant varieties. Consult your local nursery, county cooperative extension office, garden clubs or a good reference book.

☛ Consider replacing

your lawn with plants and landscaping more suitable to California's climate and scarce water supply. A combination of drought–resistant groundcovers, rocks, shrubs, flower beds and flagstones can make pretty, low–maintenance alternatives to lawns.

☛ Pick the right spot

for planting. Look for sunny spots with good drainage. Avoid slopes and plant along contour lines to minimize erosion. Matching the site with the plant's need for sun, shade, room and water will produce healthier, more pest and drought resistant plants.

☛ Pull or hoe weeds

before they flower. To prevent weed germination in the fall, cover the ground with garden fabric (lets rain through).

☛ Remove intruding tree

roots mechanically, or by hiring a professional to apply non–metallic foaming herbicides. Avoid copper–sulfate root–killing products.

☛ Plant trees and shrubs

in bare patches, and around lawns and property lines to minimize erosion.

☛ Conserve water by

watering only when necessary (check moisture an inch or two below surface) and by using water–efficient sprinklers and timing devices, or drip irrigation.

☛ Water your yard early

or late in the day to reduce evaporation.

☛ Cut grass frequently

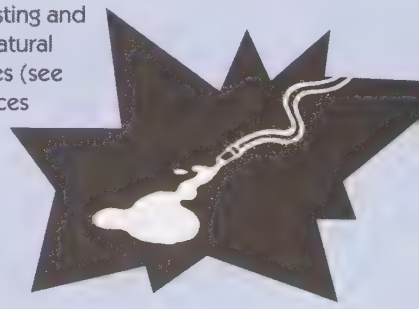
with a sharp blade. Leave at least two inches of the blade to prevent weed growth and encourage deeper roots which hold the soil in place.

☛ Compost garden

trimmings into natural fertilizer for your garden (or contribute them to a community composting program). If you must use conventional fertilizers, look for slow-release products (like fish emulsion) to minimize excess nitrogen runoff.

☛ For more ideas, read

about companion planting, integrated pest management, organic gardening, composting and other natural practices (see references p. 24).



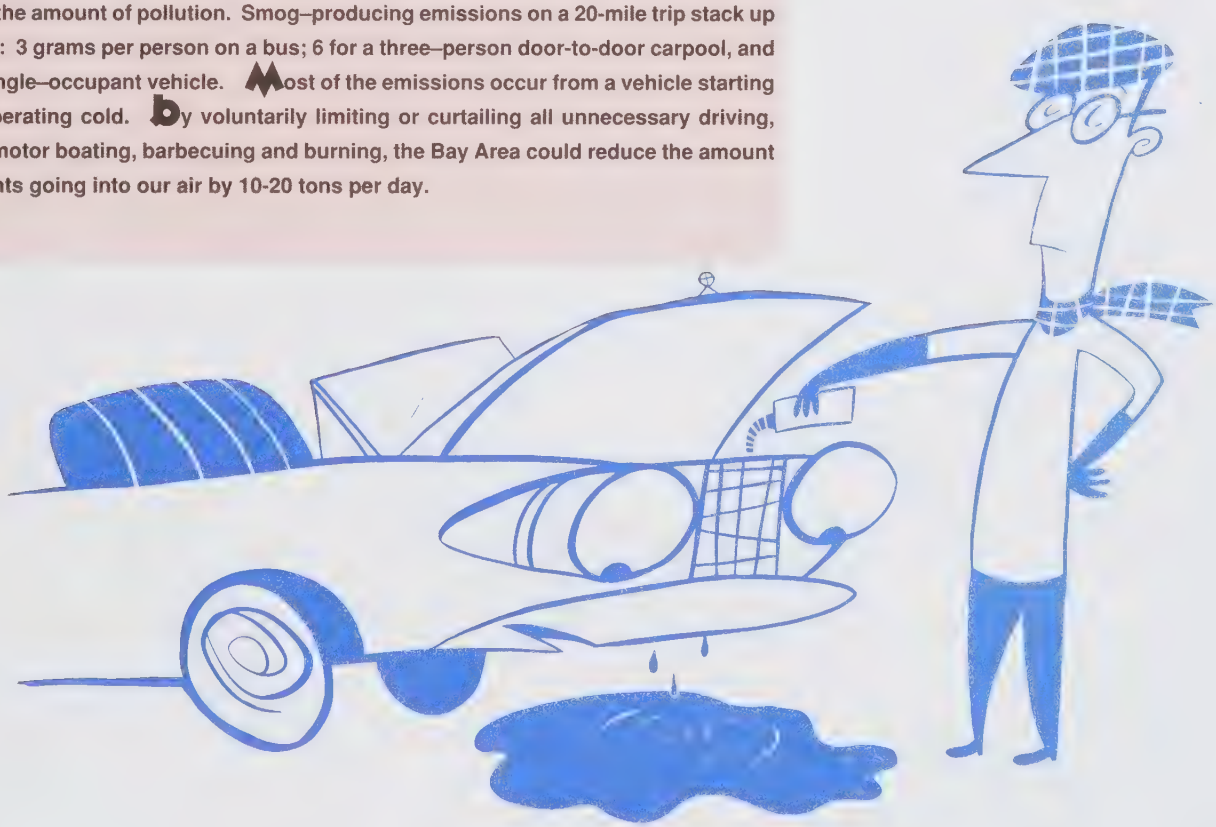
Fine tune your green thumb . . .

In the Garage and on the Road

Dozens of simple, everyday car maintenance tasks can contribute pollutants to our Estuary. Just throwing away an old battery, washing the car, or pouring used motor oil down a drain can add up to a significant threat to the estuarine ecosystem. The four million cars on the region's roads and highways leave dozens of pollutants in their wake—pollutants ripe for transport via runoff. Even tailpipe emissions are of concern, as airborne toxics such as polynuclear aromatic hydrocarbons (PAHs) enter the Estuary through atmospheric fallout.

believe it or not

Half of all Americans change their own oil. Every year, Americans illegally dump 120 million gallons of used oil—11 times the amount of the *Exxon Valdez* spill—on the ground, down storm drains, and in the trash. One quart of oil can contaminate up to 250,000 gallons of water. The oil from one engine (4-6 quarts) can produce an 8-acre oil slick. Approximately 42 gallons of crude oil are needed to refine 2 1/2 quarts of lubricating oil. Yet it takes only one gallon of recycled oil—and about half as much energy—to produce the same 2 1/2 quarts. In recent years, atmospheric fallout contributed approximately 18-63 tons of lead (more than that contributed by municipal and industrial effluent), and 132 tons of hydrocarbons to Estuary pollution annually. Vehicle type and occupancy rates influence the amount of pollution. Smog–producing emissions on a 20-mile trip stack up as follows: 3 grams per person on a bus; 6 for a three–person door-to-door carpool, and 16 for a single–occupant vehicle. Most of the emissions occur from a vehicle starting up and operating cold. By voluntarily limiting or curtailing all unnecessary driving, painting, motor boating, barbecuing and burning, the Bay Area could reduce the amount of pollutants going into our air by 10-20 tons per day.



Overhaul your car habits . . .

☛ Minimize your driving
and maximize your use of less–polluting carpooling and public transit options. Many companies coordinate carpooling; some even offer incentives (see p. 24).

☛ Don't dump gasoline,
used oil or other automotive products in the toilet, sink, curbside storm drain or street gutter.

☛ Pump gas and change
fluids carefully to avoid spills on the ground. Place a drip pan under your work area. Pour kitty litter, sawdust or cornmeal on spills. Allow these absorbents to remain on the spill spot for several hours. If it's only a small spill, place the used absorbents in a strong plastic bag in the trash. If it's a large spill (over one gallon of absorbent), take the material to a household hazardous waste disposal center or event (see inside front cover). Be especially careful with antifreeze—sweet but deadly to wayward pets.

☛ Recycle used motor oil
and antifreeze by placing them in strong plastic containers and taking them to a gas station or collection center. Many cities now offer curbside motor oil pick-up programs through their garbage services. Call your local garbage company for details. See inside front cover for starters.

☛ Don't mix waste oil
with gasoline, solvents or other liquids before recycling.

☛ Recycle car batteries.
California law requires a retailer to accept your old battery when you buy a new one. Your local hazardous waste collection program may also take them.

☛ Check for leaks under
the car after an overnight stop. Taking your car in for regular service helps prevent leaks and reduce emissions.

☛ Store car wax and
unused automotive fluids in airtight containers in a cool, dry, dark place. These items have a long shelf life, and are better used than discarded or recycled.

☛ Wash your car with
biodegradable, phosphate–free detergent, using as little soap as possible. Get a pistol grip hose nozzle to conserve water. Dump the bucket of soapy water in the toilet or sink, not the storm drain. Rinse soap suds onto grass or gravel, where they can filter through vegetation and soil before entering our waterways. Better yet, park your car on grass or gravel before washing. If you use car washes, patronize those that recycle water.

☛ Read product labels
and chose those with the least toxic ingredients (see *Watch Out for These Toxic Ingredients* p. 21).

☛ Substitute non–toxic
products whenever possible. Baking soda paste works well on battery heads, cable clamps and chrome; mix the soda with a mild, biodegradable dishwashing soap to clean wheels and tires; for windows, try white vinegar or lemon juice mixed with water.

☛ Maintain your air
conditioning to prevent freon leaks. Run your air conditioning once every two weeks to keep seals from cracking. Freon, a chlorofluorocarbon (CFC), can speed global warming and sea level rise.

☛ Ask your mechanic
to practice environmentally sound shop management and CFC recovery. Mention that it makes a difference to your patronage. Remind your mechanic that state and federal laws require shops to reduce the quantity of heavy metals (present in many automotive products) discharged into our sewers. Suggest some of the excellent references on best management practices for automotive shops listed on p. 24.

Outside Your Home

Open the front or back door, and you'll find a number of subtle sources of water pollution. Most obvious are the little gifts your dog leaves out on the lawn—droppings full of viral and bacterial contaminants. Less obvious is that bright green spot on the lawn or strange odor indicative of a septic system on the blink. Some of us have a direct line to the sewer; others maintain our own septic systems. Whatever the method, pipes, tanks, drainfields and other on–site sanitary disposal facilities can all back up or leak into waterways if poorly maintained. Last but not least are outdoor drainage systems, most of which channel rain and runoff from your potentially–contaminated walkways and gardens into the nearest creek or storm drain.

Keep the outdoors great!

☛ Direct runoff water
from roof gutters, basements and other drainage onto grass and gravel, and away from storm drains and septic systems. Excess runoff reduces the capacity of your septic system's drainfield to absorb effluent.

☛ Consider replacing
hard, impermeable surfaces around your home with permeable ones. Instead of solid paving for driveways, walkways and outdoor areas, use wooden decking, bricks, stones or pavers so that runoff can penetrate gaps and filter through the soil and gravel underneath.

☛ Maintain your septic
system. Get your tank inspected every year, and pumped out every 3-5 years (every other year if you use a garbage disposal).

☛ Keep solvents, toxic
chemicals and grease out of your septic tank. Pouring them down the drain may inhibit your system's ability to break down domestic waste or leak toxic residues into the surrounding environment.

☛ Avoid septic system
cleaning solvents containing methylene chloride or 1,1,1-trichloroethane.

☛ Avoid building, paving,
parking or moving heavy equipment over your septic system's drainage field. Plant trees and shrubs away from drain tiles to avoid clogging lines.

☛ Build pools away
from your septic system.

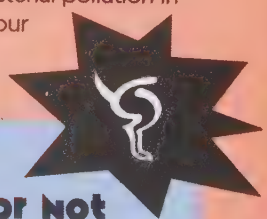
☛ Don't empty chlorinated
water into ponds, streams or storm drains, where it could cause fish kills. To drain into the storm drain, you must (according to the law) remove all chlorine residual.

☛ Dechlorinate pools
and hot tubs before draining by letting them sit for up to two weeks (if you can't wait two weeks, add sodium bisulfate in amounts suggested on the label).

☛ Let the pool sit
up to a month before draining if you've recently added a copper–based algaecide. Copper can be toxic to aquatic organisms. Substitute an *organic approach* algaecide next time.

☛ Pile wood away from
your home to minimize termite spread and the potential need for chemical control.

☛ Walk your pets on dirt
or grass to prevent bacterial pollution in runoff. Pick up after your pet and dispose of wastes in the toilet.



believe it or not

Rainwater runs off paved surfaces 10 times faster than off unpaved land.

At Your Construction Site

Whether you're building a home, office or large scale development, construction creates special problems for Estuary water quality. Once the bulldozer's cleared your property of rocks and vegetation, not to mention reshaped the landscape, there may be little left to protect the soil from severe erosion and few barriers to stop site runoff. While the primary pollutant is sediment, construction can also contribute pollution from the miscellaneous chemicals and fuels lying around the work site. And poor construction quality, both in buildings and sanitary systems, can mean more pollution in the years to come.

Construction the clean way . . .

☛ **Avoid bulldozing**
and outdoor construction in the rainy season.

☛ **Schedule construction**
to minimize soil exposure.

☛ **Limit soil disturbance,**
keeping as much of the original vegetation as possible, and planting temporary cover as necessary.

☛ **Check your soil type**
and build accordingly. Get a soil survey, and share it with your engineer, architect and builder. Make sure to survey all pertinent factors, including permeability, the level of the water table, the soil's texture, and the steepness of slopes.

believe it or not

Erosion rates from construction sites can be 10-20 times those from agricultural lands.

☛ **Pick your building site**
carefully. Avoid level areas at the base of hills (which tend to be wet), streambanks, soggy spots, and depressions.

☛ **Locate septic systems**
at a sufficient distance from streams, lakes, drainage ditches, flood plains, wetlands and the Estuary shore in accordance with government regulations.

☛ **Divert runoff around**
excavations using check dams and ditches, and filter structures made out of stone, gravel or sandbags.

☛ **Install gravel trenches**
along driveways or patios to collect water and allow it to filter into the soil.

☛ **Keep sites clean**
of loose dirt, litter, toxic chemicals and other debris.

☛ **Conduct all vehicle**
and equipment maintenance and refueling at one location with pollution prevention controls. Perform major repairs off-site at appropriate facilities.

☛ **Cover stockpiles**
and landscaping materials with tarps.

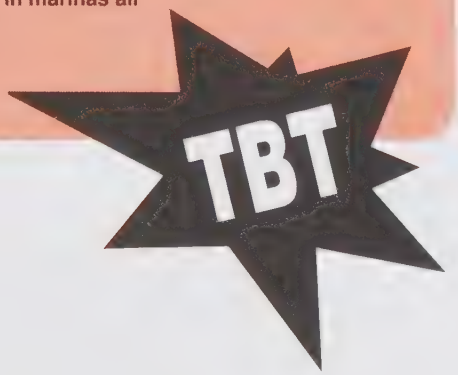
☛ **Look up the law.**
Federal law now requires construction sites over five acres in size to apply for a stormwater discharge permit and develop a stormwater management plan.

On Your Boat

As we boat on the Bay or Delta, we bring with us a host of potential hazards to the estuarine environment. Just by tossing out some oily bilge water, cleaning the boat or flushing the head, you could be polluting the very waters that make boating here so enjoyable. That anti–fouling agent (tributyl tin) in your old can of boat paint is one of the most toxic substances known to the marine and estuarine ecosystem. And a strong dose of chlorine from your holding tank can kill fish or shellfish in your vicinity. Even your boat wake can pose problems, spurring erosion of fragile streambanks, shorelines and levees.

believe it or not

The untreated sanitary discharges of a devoted weekend sailor produce an amount of bacterial pollution equal to that of 100,000 people whose wastes are treated. One ounce of TBT can kill most organisms in 250 million gallons of water. High levels of TBT have been found in marinas all around the Estuary.



☛ **Minimize oil and fuel** spills by placing drip pans under the engine and fuel lines whenever possible.

☛ **Place a bilge pillow** (an oil absorbing sponge) in your bilge to remove oil.

☛ **Clean your boat with** a non-toxic detergent and scrub brush. Minimize use of products that remove stains and make your boat shine—they're often extremely toxic.

Run a tighter ship . . .

☛ Avoid using boat paints

containing TBT (tributyl tin). Regulations prohibit operators of boats under 65 feet long from using TBT. Copper–based anti-fouling additives may be less toxic than TBT, but still pollute the water. Whenever possible, use pure, old–fashioned elbow grease to clean your boat bottom.

☛ Scrape your boat bottom

over a drop cloth. Vacuum TBT contaminated dust or scrapings, and take the bag to a hazardous waste collection center or event (see inside front cover).

☛ Get a holding tank.

If you must flush the head without a tank, avoid doing so in marinas, Delta channels and the Bay—especially Richardson Bay and the South Bay.

☛ Discharge tank wastes

at pump-out stations, rather than when you're underway.

☛ Hook up to the sewage

main if you live aboard a boat or houseboat.

☛ Slow down near shores

to prevent erosion, especially in streams, rivers and inlets when you're less than 500 feet from land. The closer the shore, the greater the hull size, and the shallower the depth, the more erosion your boat wake can cause.

☛ Bring refuse back

to dock, especially plastic containers and tangled fishing gear. Retrieve plastic trash, netting, six-pack yokes and other items from the water.

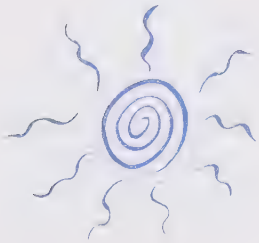
☛ Stock your boat with

reusable cups, plates and other utensils, so you can avoid throw and blow away plastic and styrofoam.

☛ Report boaters seen

making illegal discharges or discarding significant quantities of netting, line, and other refuse into the water to the Coast Guard or other local law enforcement agencies (see inside front cover).

On Your Farm



The Estuary and its watershed irrigate millions of acres of farmland, sustaining California's multi-billion dollar agricultural industry. As a farmer, the way you select and grow your crops, graze cattle, manage irrigation, and care for your land can have a significant impact on Estuary pollution and the future quality and quantity of your water supply. So keep an eye on potential pollution to surface tailwater and drainage water pumped from underground. Tailwater can all too easily collect harmful amounts of eroded soil, salts, organic material, trace elements and chemical residues on its way back to the Estuary. Drainage water in parts of the San Joaquin Valley may pick up selenium and other toxicants.

Stand out in your field . . .

☛ **Locate animal feedlots,** manure storage areas and dairies downhill from streams. If you must locate them uphill, provide catchment areas for runoff.

☛ **Minimize animal** husbandry impacts by building concrete manure pits, controlling grazing rates, rotating pastures, and fencing streambanks.

believe it or not

California farms produce 45% of all the vegetables and fruit consumed in the United States. Studies in 1989-1990 of one 40–mile reach of the San Joaquin River found organophosphate and carbamate pesticide residues present at concentrations toxic to invertebrates (clams, worms and other bottom–dwelling organisms) more than half the year. Fish in different parts of the Delta exceed National Academy of Sciences and Food and Drug Administration guidelines for chlordane, DDT, toxaphene and other pesticides. Nitrate concentrations derived from fertilizers and manure in some San Joaquin Valley wells are high enough to pose a hazard to infants, some livestock and some crops. Algae in tailwater and tile drainage water evaporation ponds at Kesterson National Wildlife Refuge concentrated the naturally–occurring trace element selenium to levels 100-2600 times the level found in the water—killing some migratory birds and deforming chicks as the selenium accumulated in the food chain. Membership in California Certified Organic Farmers grew from 40 members in 1973 to 640 members in 1990. A study comparing two adjacent almond ranches—one farmed using a conventional pesticide and fertilizer program, and the other farmed organically without chemicals—found that the organic farm netted 30% more per acre as a result of lower costs.

☛ Limit use of pesticides

and synthetic fertilizers. Read labels carefully and choose the least toxic and least persistent products. Current pesticides of concern to water quality include organochlorines such as toxaphene and dicofol, organophosphates such as methyl parathion, and carbamates such as carbaryl molinate, thiobencarb and carbufuran.

☛ Use chemicals carefully.

Pay attention to frequency, timing and amount of chemical use. To maximize benefits and minimize waste and water quality impacts, avoid applying pesticides, herbicides or fertilizer when rain or storms are forecast. Delay irrigation for one or more days after application.

☛ Take old containers

or bags of banned or restricted pesticides to hazardous waste disposal centers. Make sure they're clearly labeled. For information on pesticide restrictions and disposal, call the National Pesticide Telecommunications Network (800)858-7378.

☛ Follow the contours.

Plow, plant and harvest along hill contours, rather than straight up and down slopes, to reduce erosion.

☛ Maintain a vegetative

buffer between crops and pasture and waterways to prevent erosion and provide habitat for insect–eating birds. Avoid plowing right up to the edge of the streambank, drainage ditch or canal.

☛ Rotate crops, and

include soil conserving crops with deep roots in the rotation.

☛ Plant cover crops—

adding strips of close–growing crops as buffers between strips of row crops—to prevent soil erosion.

☛ Install back–flow

prevention devices or air gaps between your groundwater source and irrigation systems to minimize the potential for pesticide contamination.

☛ Control erosion damage

by minimizing tillage, and by installing terraces, diversion channels, sediment basins, grassed waterways and tailwater recovery systems.

☛ Conserve irrigation

water. Use sprinkler or drip irrigation to minimize runoff. Manage quantity and timing of irrigation water to control salt build up in fields, and minimize evaporation.

☛ Take responsibility

for your drainage: The State Water Quality Control Plan for Inland Waters requires agricultural dischargers to identify or form drainage entities responsible for implementing best management practices to meet the plan's water quality goals and objectives.

☛ Call your local Soil

Conservation Service office, agricultural commissioner, or county extension agent for more information. You'll find dozens of useful documents available on best management practices for farming (see p. 24).

☛ Consider sustainable

or organic farming methods which reduce chemical use, increase natural checks and balances, and improve long–term fertility. For more information, see p. 24.

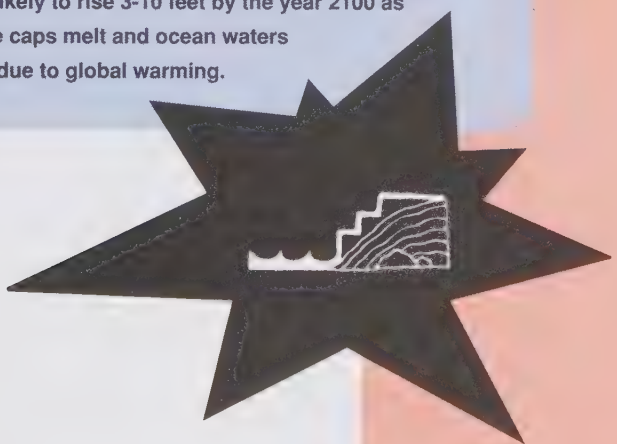
Along Streams and Shores

If you look hard enough around your neighborhood, you're sure to find one of the myriad streams, rivers, creeks and sloughs that collect water from our watershed and feed the Estuary. In urban areas, the creek might be in a culvert; in rural zones, a ditch or drain. Whatever its form, these areas provide essential places for fish and wildlife to shelter and raise their young. Unfortunately, urban and rural growth continues to lay siege to these fragile zones—clearing stream and river banks, altering marshes, and littering and building along waterfronts. Meanwhile, natural soil subsidence in the Delta and sea level rise worldwide promise to exacerbate impacts on the Estuary's streams and shores.

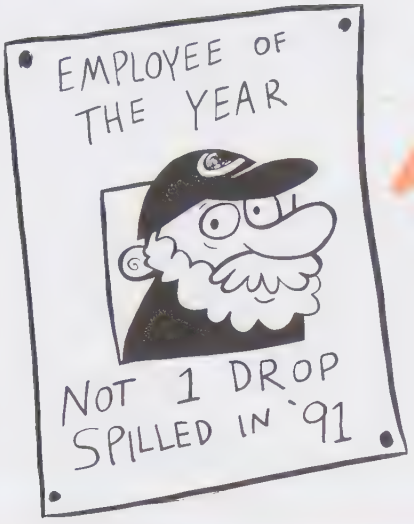
Shore it up. . .

believe it or not

Estuary margins are eroding rapidly—3-16 feet per year on the eastern shore of the South Bay and 1-2.9 feet per year off Marin. Delta peat soils have subsided to 25 feet below sea level due to oxidation, erosion, burning, and compaction. Soil loss and compaction average 2-3 inches per year. The sea level is likely to rise 3-10 feet by the year 2100 as polar ice caps melt and ocean waters expand due to global warming.



- **Maintain existing** vegetation and plant new trees and shrubs on shorelines or streambanks to minimize erosion.
- **Plant native** beachgrasses, cordgrass, pickleweed and other marsh plants along shorelines. Each of these species lives in a special zone along the shoreline influenced by tides and runoff, so you'll need expert advice on what to plant. Shoreline park staff may be able to get you started.
- **Clear streams,** creeks and sloughs of litter, debris and obstructions.
- **Keep people,** cars and grazing animals away from streambanks.
- **Replace rough trails** with steps down banks for water access.
- **For heavily eroding** banks, get advice from your local Resource Conservation District of the U.S. Soil Conservation Service (see p. 24) or a structural engineer.



All the things you do in your home, yard and garage to conserve water and minimize pollution can be done at work too! Look for the same chemicals in your janitor's closet, the same water-guzzling toilet and leaky faucet in the bathrooms, the same waste-baskets filled with recyclable materials, the same spills in work areas and shops. For industrial or manufacturing enterprises, there's likely to be a host of cleansers, solvents and pollutants particular to your workplace. While you may not be the person to make the changes, you may be the person to get things rolling.

☛ Encourage your business

to draft a series of Best Management Practices (BMPs) specific to your company. BMPs focus on controlling pollutants at the source. Such practices include collecting and treating pollutants before they reach our waterways; constructing control mechanisms such as concrete basins to capture washdown or stormwater; substituting a more benign raw material for a toxic one; reusing and recycling materials and water; shifting from chemical to mechanical processes; and improving the efficiency of technology and treatment of wastewater (see p. 24 for BMP reference materials).

☛ For industries

and businesses using hazardous chemicals, cover and store all materials carefully; prevent, prepare for and clean up spills; bag or drum used chemicals, as well as materials that have come in contact with them (including contaminated soil); label and transport to an EPA authorized disposal facility.

☛ For photoprocessing

industries, treat spent chemicals on site to remove silver, or have spent fix or bleach hauled away for reclamation and disposal by a licensed contractor.

☛ For offices,

the principles in this handbook can be easily applied to your workplace. Share this handbook with your work friends, associates and office manager.

☛ For automotive shops,

work to minimize spills, recover CFCs, and reduce waste materials containing heavy metals (see references p. 24).

☛ For construction

and landscaping industries, work to reduce erosion and runoff (see p. 13 for starters and p. 24 for references)

☛ Check the regulations.

Federal law now requires industry and construction businesses (working on sites over five acres) to apply for stormwater discharge permits and develop stormwater management plans.

☛ Report illegal dumping

(anonymously) to your local Regional Water Quality Control Board, water district, public works department or the BayKeeper (see inside front cover).

believe it or not

Chevron eliminated 70-90% of the chromium and lead in its waste effluent by changing one of the chemicals used in its cooling towers and improving the efficiency of a catalyst manufacturing site. 3-M Corporation reports saving $300 million since 1975 through waste reduction. Peninsula Plating Works reduced water use from 10,000 to 2,000 gallons per month by modifying rinse procedures to catch and reuse water, and to minimize evaporation. In 1991, Genentech cut its energy usage by 1.9 million kilowatt hours by adjusting air conditioning and heating systems to better match daily weather conditions.

Getting down to business . . .

In Your Community

Making the leap from individual to community action is important. There are dozens of things you can do at the local, regional and state levels to help save our Bay and Delta. Whether it's attending a public hearing on an industrial discharge permit or proposed shoreline development or working with your neighbors, friends and schools to clean beaches, clear creeks or stencil storm drains, community effort is powerful and worthwhile. Community effort will be even more important in the coming decade, as California's fast–growing urban population competes with fish, wildlife and farmers for rights to the Estuary's scarce water.

Hop on the bandwagon!

☛ Stencil your local
storm drain. Stencil kits saying *Don't Dump: Flows to Bay/Delta* are available from the San Francisco Estuary Project. Your city public works department may offer stencils too.

☛ Get your feet wet.
Join in local clean-ups of our streambanks and shorelines. Participate in other hands–on, community–level Estuary restoration programs such as wetland creation, dune revegetation, and wildlife habitat enhancement (see *Where to Volunteer* on the inside back cover).

☛ Volunteer for one
of the many nonprofit groups working to protect and restore our Estuary (see inside back cover).

☛ Educate your friends,
officemates and children about the importance of our Estuary and the things they can do to protect its health.

☛ Encourage schools
to obtain curricula focused on the Estuary and marine ecology. Many organizations offer curricula and educational programs (see the *Coastal and Marine Educational Resources Directory for the San Francisco Bay Area* published by the California Coastal Commission).

☛ Visit shoreline parks
and join guided birdwatching and wetland ecology walks. The more you understand about the marvels of our Estuary, the more you'll want to work to save them.

☛ Put your name on
the mailing lists of your local county planning department, Regional Water Quality Control Board, Environmental Protection Agency, and hazardous waste management program. This way, you'll receive notification of public hearings and public comment periods on draft environmental impact documents.

☛ Attend public hearings
on water quality and land use and development issues. Voice concerns about environmental impacts, and support for source reduction efforts, BMPs for business, sustainable development and natural resource protection.

☛ Encourage cities
and counties to launch curbside recycling and motor oil pick-up programs, and to provide regular, easily accessible household hazardous waste disposal programs.

☛ Encourage your local
municipal government to clean streets and catch basins more often, to enforce pooper–scooper laws, and to use porous asphalt for streets and sidewalks.

☛ Encourage local and
state governments to legalize gray water systems that recycle shower, bath and laundry water. Any city and county can legalize gray water (six counties already have—all in Central and Southern California) without state or federal approval.

☛ Be a watchdog.
You can call the BayKeeper or one of the agencies listed on the inside front cover to report spills, illegal dumping and other water quality problems.

Safe Substitutes

Air Freshners

- For sink disposal odors, grind up used lemons.
- For surface odors on utensils and chopping blocks, add a few drops of white vinegar to soapy water.

Deodorizers

- For carpets, mix 1 part borax with 2 parts cornmeal; spread liberally; and vacuum after an hour.
- Sprinkle baking soda in the bottom of cat boxes and garbage cans.

Dish Detergents

- For dishes, use mild, biodegradable, vegetable oil-based soap or detergent.
- For dishwashers, choose a detergent with the lowest phosphate content.

Disinfectants

- To kill germs on meat cutting boards, shower stalls or moldy areas, mix 1/4 cup liquid chlorine bleach in a gallon of water.
- For all other disinfecting tasks, try 1/2 cup borax in 1 gallon hot water.

Drain Openers

- Pour boiling water down the drain once a week.
- For clogs, add a handful of baking soda and 1/2 cup of white vinegar to your drain; cover tightly and let sit 15 minutes while carbon dioxide bubbles work on clog; rinse with 2 quarts boiling water; follow with a plunger.
- For stubborn clogs, use a metal snake.

Floor Cleaners

- For plain wood floors, use a damp mop with a mild vegetable oil soap and dry immediately.
- For painted or varnished wood floors, combine 1 teaspoon of washing soda with a gallon of hot water. Rinse and dry immediately.
- For vinyl floors, combine 1/4 cup white vinegar, 1/4 cup washing soda with 1 gallon warm water, and mop.
- For scuff marks on linoleum, scrub with toothpaste.

Furniture Polish

- For finished wood, clean with a mild vegetable oil soap.
- For unvarnished wood, polish with almond, walnut or olive oil; be sure to remove excess oil.
- Revitalize old furniture with linseed oil.

Garden Fertilizers

- Use nutrients from your own compost pile.
- Use organic soil amendments such as peat moss, blood meal, bone meal, fish emulsion, manure and seaweed.

Garden Weed & Fungus Control

- For weeds, use less-toxic soap solutions/weed killers.
- For fungus, use less-toxic sulfur-based fungicides.
- To control powdery mildew on roses, spray both sides of rose leaves (in the morning, weekly) with a mixture of 2 tablespoons of mild liquid soap, 2/3 teaspoon baking soda, and 1 gallon of water.

Glass Cleaners

- Combine 1 quart of water with 1/4 cup white vinegar.

Laundry Detergent

- Look for products containing washing soda (which brightens fabrics but is safer to have around than bleach).
- Avoid products containing phosphates and fabric softeners.

Metal Polishes

- For brass, mix 1/2 teaspoon salt with 1/2 cup white vinegar with enough flour to make and apply a thick paste. Let sit for 15-30 minutes and rinse well.
- For silver, boil for 3 minutes in 1 quart of warm water, 1 tablespoon of baking soda, 1 ta-blespoon of salt, and a piece of aluminum foil (keep foil in contact with silver).
- For copper, polish with paste of lemon juice and salt.

Oven Cleaners

- Mix 2 tablespoons of liquid dish soap with 2 teaspoons of borax and 2 quarts of warm water. Apply and let sit for 20 minutes, then scrub.

Pest Control

- For outdoor ants, place boric acid or hydramethylnon baits in problem areas. To keep ants off trees and plants, place a band of sticky, adhesive material like Tanglefoot around the base. For indoor ants, caulk entry points. Apply boric acid dust in cracks and insect walkways. Be sure it's inaccessible to children and pets (it's a mild poison to mammals).
- For garden aphids and mites, mix 1 tablespoon of liquid soap and 1 cup of vegetable oil. Add 1 teaspoon of this mixture to a cup of water and spray. (Oil may harm vegetable plants in the cabbage family).
- For caterpillars in the garden, apply products containing *Bacillus thuringiensis* to leaves when caterpillars are eating.
- For mosquitoes in the yard, burn citronella candles or oil (repellant). To prevent mosquitoes around ponds, use *Bacillus thuringiensis israelensis*.
- For roaches, apply boric acid dust to cracks and other entry points (see *ants* above). Place bay leaves on pantry shelves.

Surface Cleaners

- Mix 1 quart warm water, 1 teaspoon mild dishwashing liquid, 1 teaspoon borax, and a splash of vinegar.

Toilet Bowl Cleaners

- Combine 1/2 cup borax in 1 gallon of water for cleaning and disinfecting.
- Clean frequently with baking soda.

Tub and Sink Cleaners

- Use baking soda or a non-chlorinated scouring powder like.

Upholstery & Rug Cleaners

- Clean spills immediately by blotting with club soda.
- Or use a mixture of 1 quart warm water, 1 teaspoon mild liquid soap, 1 teaspoon borax, and a splash of vinegar.

These and many other recipes and tips were published by the Santa Clara County Hazardous Waste Management Program in *Take Me Shopping; A Consumer Guide to Safer Alternatives for Household Hazardous Products.*

Watch out for these toxic ingredients

Degreasers: trichloroethylene (TCE), toluene, methylene chloride **Disinfectants:** o–phenylphenol, phenol chlorobenzene, diethylene glycol **Drain cleaners:** sodium hydroxide, potassium hydroxide, hydrochloric acid **Dry cleaning fluids:** TCE, perchloroethylene (PERC), 1,1,1-trichloroethane (TCA), naptha **Gasoline:** benzene (never use gas as a parts' cleaner or hand cleaner!) **Glue and glue solvent:** hexane, toluene **Moth balls:** napthalene, chlorobenzene, paradichlorobenzene **Oven cleaner:** methylene chloride, sodium hydroxide, potassium hydroxide **Paint thinners:** methyl isobutyl ketone, toluene **Paint strippers:** methylene chloride, xylene, toluene, methyl ethyl ketone (MEK) **Septic tank cleaner:** TCE, TCA, methylene chloride **Shoe polish:** TCE, methylene chloride, nitrobenzene **Spot removers or cleaning fluid:** carbon tetrachloride, 1,1,1-trichloroethane (TCA), trichloroethylene (TCE), perchloroethylene (tetrachloroethylene, PERC) **Toilet bowl deodorizer:** paradichlorobenzene **Upholstery cleaner:** TCE **Wood preservatives:** pentachlorophenols (PCPs), arsenic

How Toxic Are These Products?

Washington Toxics Coalition Ratings

The ratings below consider four aspects of a product: acute and chronic toxicity, physical/chemical hazards, and environmental hazards. Green is the highest rating; black is lowest. In between are yellow and red. If a product is rated with ?? in any category, it means that there was insufficient information to make a decision. These ratings represent the opinions of the Washington Toxics Coalition, subject to the following disclaimers:

- Product ratings are based upon information we were able to gather. Products may contain ingredients or contaminants unknown to us, whose presence, if known, would change the product's ratings.
- Safety of a product depends to a great extent upon how it is used. Since individuals may use a product in different ways, the ratings determined by this system are no guarantee of a product's safety.
- These ratings are presented as an informational service. A green rating does not constitute an endorsement of a particular product. WTC makes no guarantees as to the safety or efficacy of any product and assumes no responsibility or liability for any injury or damage which may occur as a result of using any such product.

Acute Toxicity

Acute toxicity refers to immediate hazards from ingesting, inhaling, or getting a product on your skin or in your eyes. Products rated **green** for acute toxicity are practically non-toxic, are not skin irritants, or are only mild eye irritants. Those rated **yellow** are slightly to moderately toxic or irritating. A **red** rating indicates moderate to high toxicity or severe skin or eye irritation. Finally, products rated **black** are extremely toxic or can damage skin or eye tissue on contact.

Chronic Toxicity

Chronic toxicity refers to effects which may arise from long-time exposure to a substance at subacute levels. Products rated **green** for chronic toxicity do not contain ingredients which cause cancer, reproductive effects, neurotoxicity, or other serious illness. Products rated **yellow** do not contain carcinogens, but may contain ingredients responsible for birth defects, fetotoxicity, or some other effects. However, normal daily use of products rated yellow would not be expected to result in these effects. Products rated **red** may contain an ingredient which has caused cancer in some studies or may pose some risk from chronic exposure. A **black** rating indicates that a substance contains a known or suspected cancer causing agent or that normal use is likely to be unsafe.

Physical/Chemical Hazards

This category reflects the flammability or chemical reactivity of products. Products rated **green** are stable and must be heated considerably in order to burn. Products rated **yellow** can burn at moderate temperatures or may be moderately reactive. Products rated **red** ignite readily or may react with other household products to produce hazardous compounds. A **black** rating indicates extreme fire or chemical hazard.

Environmental

This category considers many factors, including toxicity to fish and other wildlife, biodegradability, toxic breakdown products, water quality, and disposal. Only those categories which apply to the use and disposal of a particular type of product are considered. Products rated **green** or **yellow** should not present unacceptable hazards if used with care. Products with **red** ratings contain some ingredient which poses special hazards or they must be disposed of as a hazardous waste. Products rated **black** contain ingredients which pose high environmental risk.

Product	Acute toxicity	Chronic toxicity	Physical chemical	Environmental
Laundry Detergents/Soaps				
Ivory Snow Laundry Soap	Gn	Gn	Gn	Yl
Ajax Ultra (no phosphate)	Yl	Yl	Gn	Yl
All Detergent Powder	Yl	Yl	Gn	Yl
Amway SA-8 Powder (no phos.)	Yl	Yl	Gn	Yl
Amway SA-8 Liquid	Yl	Yl	Yl	Yl
Arm & Hammer Powder	Yl	Yl	Gn	Yl
Arm & Hammer Ultra Fresh	Yl	Yl	Gn	Yl
Bi-O-Kleen Laundry Powder	Yl	Yl	Gn	Yl
Bold Ultra (no phosphate)	Yl	Yl	Gn	Yl
Cheer Liquid or Cheer Free Liquid	Yl	Yl	Gn	Yl
Cheer Ultra (no phosphate)	Yl	Yl	Gn	Yl
Commonwealth Environ. Liq	Yl	Yl	Gn	Yl
Commonwealth Environ. Pow	Yl	Yl	Gn	Yl
Dash Detergent	Yl	Yl	Gn	Yl
EarthRite Liquid	Yl	Yl	Gn	Yl
Ecover Liquid	Yl	Yl	Gn	Yl
Ecover Powder	Yl	Yl	Gn	Yl
Life Tree Liquid	Yl	Yl	Gn	Yl
Oxydol Ultra (no phosphate)	Yl	Yl	Gn	Yl
Shaklee Basic L or Liquid L	Yl	Yl	Gn	Yl
Tide Liquid	Yl	Yl	Gn	Yl
Tide Ultra (no phosphate)	Yl	Yl	Gn	Yl
White King Detergent	Yl	Yl	Gn	Yl
Arm & Hammer liquid	Yl	Yl	Gn	Rd
Bold Powder	Yl	Yl	Gn	Rd
Cheer Powder (phosphate)	Yl	Yl	Gn	Rd
Clorox Powder	Yl	??	Gn	Rd
Country Save Detergent	Yl	Yl	Gn	Rd
Dreft Detergent (phosphate)	Yl	Yl	Gn	Rd
Granny's Power Plus	Yl	Yl	Gn	Rd
Oxydol w Bleach (phosphate)	Yl	Yl	Gn	Rd
Tide Powder	Yl	Yl	Gn	Rd
Tide Unscented Powder	Yl	Yl	Gn	Rd
Laundry Bleaches/Boosters				
Arm & Hammer Washing Soda	Yl	Yl	Gn	Gn
Arm & Hammer Dry Bleach	Yl	Yl	Yl	Gn
Shaklee Nature Bright	Yl	Yl	Yl	Gn
Borax (20 Mule Team)	Yl	Yl	Gn	Yl
Borateam Dry Bleach	Yl	Yl	Gn	Yl
Clorox 2 Dry Bleach	Yl	Yl	Gn	Yl
Ecover Non-chlorine Bleach	Yl	Rd	Yl	Gn
Vivid Liquid Bleach	Yl	Rd	Yl	Yl
Clorox 2 Liquid Bleach	Yl	Rd	Yl	Yl
Biz Bleach (phosphate)	Yl	??	Gn	Rd
Clorox Chlorine Bleach	Rd	Rd	Rd	Yl
Purex Chlorine Bleach	Rd	Rd	Rd	Yl
Hand Dishwashing Detergents				
Allen's Dishwashing Liquid	Yl	Yl	Gn	Yl
Ecover Dishwashing Liquid	Yl	Yl	Gn	Yl
EarthRite	Yl	Yl	Gn	Yl
Commonwealth Environmental	Yl	Yl	Gn	Yl
Life Tree	Yl	??	Gn	Yl

Product	Acute toxicity	Chronic toxicity	Physical chemical	Environmental
Shaklee Satin Sheen	Yl	??	Gn	Yl
Ivory Liquid	Yl	Yl	Yl	Yl
Joy	Yl	Yl	Yl	Yl
Dawn	Yl	Yl	Yl	Yl
Earth Wise	Yl	Yl	Yl	Rd
Automatic Dishwasher Detergents				
Kleer 2 or Kleer 3	Yl	Yl	Gn	Y
Bio Pac Automatic Dish	Yl	Yl	Gn	Yl
Life Tree	Yl	Yl	Gn	Yl
Basic D (new no phosphate)	Yl	Yl	Gn	Rd
generic sod. hexametaph.	Yl	Yl	Gn	Rd
Amway Auto Dish	Yl	Yl	Rd	Rd
Cascade Liquid or Powder	Yl	Yl	Rd	Rd
Dishwasher All	Yl	Yl	Rd	Rd
Electrasol	Yl	Yl	Rd	Rd
Palmolive Liquid	Yl	Yl	Rd	Rd
Shaklee Basic D (phosphate)	Yl	Yl	Rd	Rd
Sunlight Liquid or Powder	Yl	Yl	Rd	Rd
Scouring Cleaners				
baking soda	Yl	Yl	Gn	Gn
baking soda/soap paste	Yl	Yl	Gn	Yl
Bon Ami Polishing Cleanser	Yl	Yl	Gn	Yl
Shaklee At Ease Paste or Liq.	Yl	Yl	Gn	Yl
Ecover Cream Cleaner	Yl	Yl	Gn	Yl
Soft Scrub Cleanser	Yl	Yl	Gn	Yl
7th Generation Cream Cleaner	Yl	Yl	Gn	Yl
Comet Cleanser	Yl	Yl	Rd	Yl
Soft Scrub with Bleach	Yl	Rd	Rd	Yl
Zud	Yl	Yl	Rd	Yl
Glass Cleaners				
plain water	Gn	Gn	Gn	Gn
lemon juice and water	Gn	Gn	Yl	Gn
vinegar and water	Gn	Gn	Yl	Gn
soap and water	Gn	Gn	Gn	Yl
Planet Glass Cleaner	Yl	Yl	Gn	Gn
Windex with Vinegar	Yl	Rd	Yl	Gn
Windex with Ammonia	Yl	Rd	Rd	Gn
Drain Cleaners				
plunger	Gn	Gn	Gn	Gn
snake	Gn	Gn	Gn	Gn
pressure gun	Gn	Gn	Gn	Gn
boiling water	Gn	Gn	Gn	Gn
baking soda/vinegar	Yl	Yl	Gn	Gn
Drano liquid	Bk	??	Rd	Yl
Drano crystal	Bk	??	Rd	Yl
Liquid Plummer	Bk	??	Rd	Yl
Toilet Bowl Cleaners				
soap and water	Gn	Gn	Gn	Yl
Bon Ami Cleanser	Yl	Yl	Gn	Yl
EarthRite	Yl	Yl	Gn	Yl
Ecover	Yl	Yl	Gn	Yl
Lysol Liquid Toilet Bowl	Bk	??	Rd	Yl
Lysol Cling Thick Liquid	Bk	??	Rd	Yl
Sani Flush	Bk	??	Rd	Yl
Vanish Crystal	Bk	??	Rd	Yl

Product	Acute toxicity	Chronic toxicity	Physical chemical	Environmental
Oven Cleaners				
baking soda/soap	Yl	Yl	Gn	Yl
Bon Ami Cleanser	Yl	Yl	Gn	Yl
Easy Off Non-Caustic Formula	Yl	??	Gn	??
Ammonia	Bk	Rd	Rd	Yl
Easy Off Oven Cleaner	Bk	??	Rd	Rd
SOS Oven Cleaner	Bk	??	Rd	Rd
Flea Control Products				
flea comb	Gn	Gn	Gn	Gn
vacuum cleaner	Gn	Gn	Gn	Gn
Safer's Indoor Flea Guard	Gn	Yl	Gn	Yl
boric acid	Yl	Yl	Gn	Gn
diatomaceous earth	Yl	Yl	Gn	Gn
Precor (methoprene) dilute	Gn	Yl	Gn	Gn
Safer's Entire	Rd	Yl	Yl	Rd
Precor (methoprene) conc.	Rd	Rd	Yl	Rd
Flea Stop Pet Spray	Yl	Rd	Rd	??
Flea Stop Shampoo	Yl	Rd	Gn	Gn
Flea Stop Dip concentrate	Yl	Rd	Yl	Rd
Flea Stop Dip diluted	Gn	Rd	Gn	??
Flea Stop Flea Mist	Rd	??	Rd	??
flea bomb w flamm. propellant	Bk	??	Bk	Rd
Other Indoor Insect Controls				
SureFire Housefly Trap	Gn	Gn	Gn	Gn
Houseplant Trapstix	Gn	Gn	Gn	Gn
SureFire Houseplant Pest Trap	Gn	Gn	Gn	Gn
SureFire Cockroach Trap	Gn	Gn	Gn	Gn
BioLure Meal Moth Trap	Gn	Gn	Gn	Gn
PIC Flycatcher	Gn	Gn	Gn	Gn
flypaper	Gn	Gn	Gn	Gn
Ortho High Power Roach Trap	Gn	Gn	Gn	Gn
meal moth trap	Gn	Gn	Gn	Gn
Safer's Insecticidal Soap	Gn	Yl	Gn	Yl
boric acid: roach, ant, flea	Yl	Yl	Gn	Gn
diatomaceous earth (natural)	Yl	Yl	Gn	Gn
pyrethrum/pyrethrins	Rd	Rd	Gn	Rd**
mothballs (naphthalene)	Rd	Rd	Yl	Rd
mothballs (para)	Yl	Bk	Yl	Bk
Lawn and Garden Insect Controls				
aphid/whitefly sticky trap	Gn	Gn	Gn	Gn
Surfire Garden Pest Trap	Gn	Gn	Gn	Gn
codling moth pheromone trap	Gn	Gn	Gn	Gn
Ortho Yellowjacket Trap	Gn	Gn	Gn	Gn
Japan. Beetle pheromone Trap	Gn	Gn	Gn	Gn
Gypsy Moth pheromone Trap	Gn	Gn	Gn	Gn
Apple Maggot pheromone Trap	Gn	Gn	Gn	Gn
Slug Saloon Slug Trap	Gn	Yl	Gn	Gn
beer slug trap	Gn	Yl	Gn	Gn
copper sheet slug barrier	Gn	Gn	Gn	Gn
Slug and Snail DeFence	Gn	Gn	Gn	??
Tanglefoot barrier	Gn	Gn	Gn	Gn
Tangletrap sticky	Gn	Gn	Gn	Gn
Safer's Insecticidal Soaps	Gn	Yl	Gn	Yl
Ortho Insecticidal Soap	Gn	??	Gn	Yl
B.t. (Dipel, Thuricide)	Yl	??	Gn	Yl
pyrethrum/pyrethrins	Rd	Rd	Gn	Rd**

**note: pyrethrum is so highly toxic to fish and other aquatic organisms that it would receive a black rating were it not so quickly degraded by sunlight in the environment.

Information Sources

Where to Get Advice & Information

Automobile

Smog Conditions (800)794-SMOG

How to help air quality (800)HELP-AIR

Carpooling (800)755-POOL

Agriculture

California Certified Organic Farmers
(408)423-2263

Committee for Sustainable Agriculture
(916)346-2777

National Pesticide Telecommunications Network (general information about pesticides)
(800)858-7378

U.S. Soil Conservation Service (916)757-8200

Business

EPA Hazardous Waste Information Line
(415)744-2074

EPA Hotline (information for businesses on federal regulations for disposal of hazardous waste)
(800)424-9346

Health & Community

California Department of Health Services
(510)540-3063 (public health assessment)
(916)323-6111 (drinking water)
(916)324-1826 (toxic substances program)

Emergency Planning & Community Right-to-Know Information Hotline (help communities prepare for accidental releases of toxic chemicals)
(800)535-0202

Safe Drinking Water Hotline (U.S. EPA)
(800)426-4791

Gardening

Bio-Integral Resource Center (pest management)
(510)524-2567

UC Extension Master Gardener Program
Alameda (510)670-5202
Contra Costa (510)646-6540
Marin (415)849-8620
Sacramento (916)366-2013
Santa Clara (408)299-2638
Solano/Yolo (707)429-6381
Sonoma (707)527-2621

This is in no way a comprehensive listing of phone numbers and references. If you have suggestions for our next edition, please write Joan Patton at SFEP, P.O.Box 2050, Oakland, CA 94604

Reference Materials

Agriculture

Agricultural Drainage: an information sheet on environmental issues, San Francisco Estuary Project

Farming and Water Quality: A Handbook for the San Joaquin River Basin, Central Valley Regional Water Quality Control Board. This 1983 handbook lists many other useful references.

Healthy Harvest III: A Directory of Sustainable Agriculture, Potomac Valley Press (order through Ag Access, U.C. Davis)

1992 National Organic Wholesalers Directory & Yearbook, California Action Network, Davis (916)756-8518

Pests of the Garden and Small Farm, UC Statewide Integrated Pest Management Project (510)642-2431

Business

California Department of Health Services: Free industry specific booklets on waste reduction techniques and information on grant and loan programs, (916)324-1807.

Guide to Commercial Recycling (everything from carpet underlay to laser optic equipment), Santa Clara County Manufacturing Group, (408)496-6801.

Hazardous Waste Management & Reduction—a Guide for Small and Medium Businesses, City of San Jose, (408)324-1807.

Santa Clara Valley Nonpoint Source Pollution Prevention Control Program publications on Best Management Practices for automotive and construction industries, (408)265-2600.

Education

Coast and Marine Educational Resources Directory for the S.F. Bay Area, California Coastal Commission (415)543-8555

San Francisco Estuary Project environmental information sheets on Pollution, Agricultural Drainage, Wetlands, Wildlife and Aquatic Resources, Land Use, Dredging and Waterway Modification, the Delta, the S.F. Bay-Delta Estuary, Who Manages the Estuary, and Water Usage. Also *An Introduction to the Ecology of the Estuary.*

Environment

Cadillac Desert, Reisner, Penguin (Western water issues)

California's Wild Heritage: Endangered & Threatened Species in the Golden State, Steinhart, California Department of Fish and Game, Natural Heritage Division

Gardening

Basic Book of Organic Gardening, Rodale Press

Carrots Love Tomatoes: Secrets of Companion Planting for Successful Gardening, by Louise Riotte, Garden Way Publishing

Common Sense Pest Control, Olkowski, Daar & Olkowski, Bio-Integral Resource Center. The Center also publishes other useful information on integrated pest management for garden, house and animal pests. Ask for a copy of their publications catalog, (510)524-2567.

Drought Tolerant Plant Guide, City of San Jose, (408)277-5790

Easy Composting, Sussman, Rodale Press

Illustrated Guide to Organic Gardening, Sunset Publishing Corp.

Let it Rot! (home composting), Campbell, Storey Publishing

Household

Bay Area Green Pages
(the most comprehensive source book on local environmental issues and resources, complete with consumer guides to recycling, waste collection and other services and products regionwide). Available in stores and from Green Media Group, P.O. Box 11314, Berkeley, CA 94701

California Buy Recycled Guide (how and where to buy recycled products), Center for Development of Recycling, (408)924-5453

Catalogs of less-toxic household products, energy and water saving devices, and recycled products:

Real Goods Trading Corp. 966 Mazzoni Street, Ukiah, CA 95482

Coop America 2100 M Street NW, Suite 403 Washington D.C. 20063

EcoSource 9051 Mill Station Road, Building E. Sebastopol, CA 95472

Green Consumer, Elkington, Hailes and Makower, Penguin Books

Nontoxic, Natural & Earthwise, Dadd, Tarcher Inc.

Product Safety Book: The Ultimate Consumer Guide to Product Hazards, Broebeck & Arvey. Available from the Consumer Federation of America, Dept. EPD, 1314 14th Street NW, Washington D.C., 20005

Tiny Game Hunting: Environmentally Healthy Ways to Trap and Kill the Pests in Your House and Garden, Klein & Wenner, Bantam

Why your House may Endanger your Health, Zamm, Touchstone, Simon and Schuster

Where to Volunteer and get Environmental Information

Audubon Society
(national office, ask for local chapters)
(916)481-5332

Bay Area Action
(415)321-1994

Bay Institute
(415)331-2303

BayKeeper
(415)567-4401

California Coastal Commission
(beach clean ups)
(415) 904-5208

California League of Conservation Voters
(415)896-5550

Citizen's Committee to Complete the Refuge
(415)493-5540

Citizens for a Better Environment
(415)243-8373

Ecology Center
(510)548-2220

Environmental Defense Fund
(510)658-8008

Friends of the River
(916)442-3155

Friends of the San Francisco Estuary
(510)464-7990

Golden Gate National Park Association
(native grass planting, dune restoration)
(415)556-4353

Greenbelt Alliance
(415)543-4291

Marin Conservation League
(415)472-6170

Marine Mammal Center
(415)289-7325

Natural Resources Defense Council
(415)777-0220

Nature Conservancy
(415)777-0487

Pacific Coast Federation of Fishermen's Associations
(415)332-5080

Planning and Conservation League
(916)444-8726

Point Reyes Bird Observatory
(415)868-1221

Sacramento Toxics Alliance
(916)442-3155

San Francisco Estuary Project
(510)464-7990

Save San Francisco Bay Association
(510)452-9261

Sierra Club
(national office, ask for chapters)
(415)776-2211

United Anglers of California
(510)845-3533

Urban Creeks Council
(510)540-6669

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estuaryWise

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This handbook
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San Francisco Estuary Project,
P.O. Box 2050
Oakland CA, 94604-2050
(510)464-7990

Everything you ever wanted to know about how to keep our Bay and Delta healthy.

- Tips on ways to stop pollution at home, in the garden, at work, on the farm, and on the road.
- Recipes for safe household cleaners and pest controls.
- Product toxicity ratings.
- Listings of local household hazardous waste collection programs, references on best management practices for business, and more!
- Ways to get involved in communitywide, environmental restoration efforts.

San Francisco Estuary Project